



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(54) Title: <b>A BLOCK CARTON WITH INTERNAL INDICATORS AND A METHOD OF ERECTING A BLOCK CARTON</b></p> <div data-bbox="470 1134 1104 1638"> </div> <p>(57) Abstract</p> <p>A block carton and a method of erecting the same wherein the block carton (1) comprises a front (2), a bottom (3) with side portions (4, 5) and a back (6) as well as corner flaps (12, 13). The corner flaps (12, 13) are provided with indicators (14) on the side which faces inwardly in the carton when the carton is erected, said indicators (14) being used during the erection for visual inspection to quickly verify whether the carton has been erected correctly. This means that the indicators (14) on the corner flaps (12, 13) will become visible already during the erection of the block carton in a freezing frame, if used. Thus, the operator is capable of quickly verifying whether the carton is correctly closed already prior to filling with fish or any other product.</p>		

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A block carton with internal indicators and a method of erecting a block carton

Technical field

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The present invention relates to a block carton, preferably coated with paraffin, for the freezing of fresh food, such as fish. The block carton consists of a number of elements that comprise a front and a bottom  
10 with side portions, said bottom being connected to a back. At the rear ends of the side portions and at the ends of the back, rear corner flaps are provided, said corner flaps being connected relative to the bottom. The uppermost edge of the back is connected to a cover  
15 portion provided with lateral cover flaps and a cover flap which are arranged for being folded down exteriorly of the erected carton during the closing procedure. Said elements are connected to each other by means of pre-embossed folding lines. Moreover the invention relates to  
20 a method of erecting a block carton in a freezing frame.

Block cartons of the type described above are used e.g. within the fish industry for the freezing of fish in blocks. For such freezing, a particular rectangular  
25 freezing frame is employed. During manual packaging of fish, the block carton is arranged in the freezing frame simultaneously with the individual elements being folded along the pre-embossed folding lines whereby the block carton is erected. The block carton is subsequently  
30 filled with fish, and the cover is folded down to close the block carton. The closed block carton is subsequently frozen for e.g. three hours following which the block carton is removed from the freezing frame, and the operator visually inspects whether the carton is closed  
35 correctly, i.e. he verifies whether the corner flaps, the lateral cover flaps and the cover flap are on the outside

of the block carton. It should be noted that it is important that the corner flaps, the lateral cover flaps and the cover flap are on the outside of the carton, since it is undesirable that the flaps are frozen in with  
5 the fish.

#### Most relevant prior art

Block cartons of the type described above are known.  
10 Thus, Danish utility model No. 9500215 teaches a block carton as described above which is provided with indicators on the side portions and the front of the carton, which indicators become visible in case of incorrect closure of the block carton.

15 It is a drawback of this block carton that the visual inspection cannot take place until the block is removed from the rectangular freezing frame, i.e. until the carton has been filled with fish, closed and frozen. If  
20 the block carton is not closed correctly, it is necessary firstly to discharge the fish from the carton following which the fish is to be thawed and the filling operation is to be repeated. In case of incorrect closure of the block carton it is thus associated with much work to  
25 remedy such incorrect closure.

#### The object of the invention

It is the object of the present invention to provide a  
30 block carton of the type described above which enables the operator to readily and quickly verify whether the corner flaps of the block carton are arranged correctly prior to filling. Moreover, it is the object of the invention to provide a method of erecting a block carton  
35 in a freezing frame.

The novel aspects of the present block carton

The block carton according to the present invention is characterised in that the rear corner flaps are provided  
5 with indicators for visual inspection on the side which faces inwardly towards the carton when the carton is erected.

Advantages

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The present invention provides the advantage that the indicators on the rear corner flaps will become visible while the block carton is arranged in the rectangular freezing frame if the block carton is incorrectly  
15 erected. Thus, the operator is capable of quickly and readily verifying whether the carton is correctly erected prior to filling.

Mode of operation

20

During use of the block carton according to the invention, the block carton is arranged on top of the rectangular freezing frame, and subsequently the operator presses the carton down into the freezing frame while  
25 simultaneously folding the corner flaps in such a manner that they abut on the outside of the carton. Simultaneously a visual inspection is carried out to establish whether the indicators on the rear corner flaps are visible. If they are, the block carton is discharged  
30 from the freezing frame whereupon it is once again pressed into the freezing frame while the corner flaps are simultaneously folded correctly. As soon as the carton is folded correctly which is indicated by the fact that none of the indicators on the corner flaps is  
35 visible, the carton is filled with fish and the cover is folded down whereby the cover flaps are caused to abut on

the outside of the block carton. The block carton is subsequently frozen for about three hours while still arranged in the freezing frame and not until then, the carton is removed from the rectangular freezing frame.

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Advantages associated with preferred embodiments

According to the invention, the front ends of the block carton's side portions and the ends of the front may be  
10 provided with front corner flaps with indicators for visual inspection on that side which is oriented towards the carton when the carton is erected. This allows for the indicators on the front corner flaps to be visible while the block carton is arranged in the rectangular  
15 freezing frame if the front corner flaps of the block cartons have been folded incorrectly. Thus the operator is capable of quickly and readily controlling whether the carton has been erected correctly prior to filling.

20 According to a particularly convenient embodiment of the invention, the rear corner flaps are secured to the sides of the block carton. Hereby the particular advantage is obtained that it is necessary to verify only whether the indicators of the corner flaps are visible in front of  
25 the interior portion of the back of the block carton. Hereby the visual control may be carried out quickly since it is necessary to inspect only one surface. Moreover, it is advantageous that the inspection to be carried out involves this particular surface since it is  
30 located within the field of vision immediately in front of the operator. Hereby the operator avoids inconvenient movements.

According to a further advantageous embodiment of the  
35 invention, the front corner flaps are secured to the sides of the block carton. Hereby it is obtained that the

visual control of the indicators on the corner flaps is only to be carried out on the inwardly facing part of the front.

5 According to a further preferred embodiment of the invention, the front corner flaps are secured to the front of the block carton. Hereby it is obtained that the visual inspection of the indicators on the corner flaps is to be carried out on the inwardly facing part of the  
10 two sides of the block carton. Depending on the position of the operator relative to the block carton, this may be advantageous since the working position of the operator is relieved.

15 The sides and front of the block carton may furthermore be provided with indicators on the outsides, which indicators become visible in case of incorrectly inwardly arranged or lacking cover flaps. Hereby it is obtained that the indicators become visible in case of incorrectly  
20 inwardly arranged or lacking cover flaps, and thus inspection of the ready-packed carton is quickly performed.

The sides, front or back of the block carton may also be  
25 provided with indicators for visual inspection, said indicators becoming visible in case of incorrectly inwardly positioned or lacking corner flaps. Hereby it is obtained that the indicators will become visible if the corner flaps are positioned interiorly or are absent. It  
30 should be noted that lacking corner flaps will not be immediately detected by the fact that corner flaps are provided with indicators on the side that faces inwardly towards the carton when the carton is erected.

35 Brief description of the drawings

The invention will now be described in further detail with reference to the drawings, wherein

Figure 1 illustrates the inside of a non-folded block carton according to the invention seen from the top,

Figure 2 is a perspective view of an erected and partially folded block carton where the corner flaps are correctly positioned, and

10

Figure 3 is a perspective view of an erected and partially folded block carton where the corner flaps are incorrectly positioned.

15 Description of a preferred embodiment

Figure 1 illustrates a block carton 1 prior to folding. In the embodiment shown, the block carton 1 is made of cardboard coated with paraffin and intended for use in connection with the freezing of fish.

20

The block carton 1 consists of a front 2 being along its one side connected to a rectangular bottom 3. The bottom 3 is moreover connected to side portions 4,5 and a back 6. The back 6 is also connected to a rectangular cover 7 having along its sides lateral cover flaps 8,9 and along its top edge a cover flap 10.

25

All of the elements listed above are interconnected via pre-embossed folding lines or so-called cardboard bridges 11 shown in Figure 1 by dashed lines. Hereby it is ensured to a higher degree that the block carton is folded correctly during the folding procedure.

30

As mentioned above, the bottom 3 of the block carton is connected to two side portions 4,5. These side portions

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4,5 are substantially rectangular, and along their front and back sides, they are connected to corner flaps 12,13 via cardboard bridges 11, whereby the corner flaps are secured relative to the bottom 3. Advantageously the corner flaps 12,13 are rectangular, but they may also be e.g. bias cut.

Each of the four corner flaps 12,13 is provided with an indicator 14 shown by the hatched area. The indicators are provided on that side of the corner flaps 12,13 which faces inwardly towards the block carton when erected and closed correctly.

Figure 2 illustrates a correctly erected block carton 1. It should be noted that the front corner flaps 12 abut on the outside of the front 2. Moreover, it should be noted that the indicators 14 on the rear corner flaps 13 cannot be seen since the corner flaps 13 abut exteriorly on the back 6 of the block carton. This indicates that the rear corner flaps 13 of the block carton 1 are folded correctly and that the carton is consequently erected correctly.

In Figure 3 an identical, incorrectly erected carton is shown. This is indicated by the fact that the indicator 14 on the one of the rear corner flaps 13 can be seen inside the erected block carton 1. Moreover, it should be noted that both the front corner flaps 12 and the second rear corner flap 13 are correctly folded, since none of its indicators 14 is visible.

According to an alternative embodiment of the invention, the rear corner flaps 13 could be secured to the back 6 instead of to the side portions 4,5. By securing the rear corner flaps 13 to the side portions 4,5, however, the particular advantage is obtained that in case of

incorrect closure, the indicators 14 of the rear corner flaps 13 will be situated in front of the back 6. Thus, it is necessary to control only one surface whereas it is necessary to control both the lateral portions 4,5 if the rear corner flaps 13 are secured to the back 6. Moreover, since the operator is always standing immediately in front of the back 6 during the folding process, the particular advantage is obtained that the control whether the rear corner flaps 13 are arranged correctly is performed very easily and quickly.

According to an alternative embodiment, the front corner flaps 12 of the block carton 1 may be secured to the front 2 instead of to the side portions 4,5. Depending on the position of the operator relative to the block carton 1, it has been found that the control whether the front corner flaps 12 are arranged correctly is in some instances more easily carried out if they are secured to the side portions 4,5 since, in this case, the operator is required to control only one single surface while the control is more easily carried out in other cases if the corner flaps 12 are secured to the front 2.

As shown in Figure 2, the side portions 4,5 and the front 2 of the block carton 1 may be provided with external indicators 15. The indicators are so dimensioned that they are not visible provided the cover 7 and its lateral cover flaps 8, 9 and 10 are correctly positioned. If one of the lateral cover flaps 8,9 or the cover flap 10 is not correctly positioned exteriorly of the sides 4,5 or the front 2, one or more of these indicators will become visible which indicates that the block carton has been incorrectly closed. The indicators 15 will also become visible if the lateral cover flaps 8,9 or the cover flap 10 have/has been torn off or damaged.

According to an alternative, not shown embodiment, the sides 4,5, the front 2 or the back 6 of the block carton may be provided with indicators for visual inspection, said indicators becoming visible in the event of  
5 incorrectly inwardly positioning or absence of corner flaps. If the corner flaps are secured to the sides 4,5 as shown in Figures 1 through 3, indicators may thus be provided on the outside of the ends of the front 2 and the back 6. These indicators will be visible in case the  
10 corner flaps are arranged inwardly, are lacking or damaged.

Use of the block carton according to the present invention thus presents the particular advantage that it  
15 is possible during the folding process of the block carton 1 to continuously monitor whether the block carton 1 is correctly folded. Compared to the prior art, it is now possible to observe incorrect folding at an earlier stage and thus to make the necessary corrections at an  
20 earlier stage. Thus it is now possible to control whether the block carton 1 has been correctly erected prior to filling with fish and freezing and to eliminate the need for initially discharging the block carton 1 from the freezing frame in which it is folded.

25 Many modifications may be carried out without departing from the concept of the invention; thus the indicators 14,15 may assume various appearances. They may be in the form of e.g. various patterns and colour indicators.  
30 Moreover, the shapes of the indicators 14,15 may differ as they need not necessarily occupy the entire corner flap 12,13 as shown in Figures 1 and 3, but may cover only a portion of the corner flaps 12,13.

C l a i m s

1. A block carton (1), preferably paraffin-coated,  
for use the freezing of fresh food, in particular fish,  
5 said block carton (1) consisting of a number of elements  
that comprise a front (2) and a bottom (3) with side  
portions (4,5), said bottom (8) being connected to a back  
(6), and wherein the rear ends of the side portions (4,5)  
and the ends of the back (6) are provided with rear  
10 corner flaps (13), said corner flaps (13) being connected  
relative to the bottom (3), and wherein the upper edge of  
the back (6) is provided with a cover (7) with lateral  
cover flaps (8,9) and a cover flap (10) which are  
arranged for being folded downwards during closing  
15 exteriorly of the erected carton (1), and wherein said  
elements are interconnected by means of pre-embossed  
folding lines (11), and wherein the block carton is  
provided with indicators for visual inspection,  
c h a r a c t e r i z e d in that the indicators are  
20 provided on the rear corner flaps (13) on the side which  
faces inwardly towards the carton when the carton (1) has  
been erected.

2. A block carton according to claim 1,  
25 c h a r a c t e r i z e d in that the front ends of  
the side portions (4,5) and the ends of the front (2) are  
provided with front corner flaps (12) which are provided  
with indicators (14) for visual inspection on the side  
that faces inwardly towards the carton when the carton  
30 (1) is erected.

3. A block carton according to claim 1 or 2,  
c h a r a c t e r i z e d in that the rear corner  
flaps (13) are secured to the side portions (4,5).

4. A block carton according to one or more of the preceding claims, characterized in that the front corner flaps (12) are secured to the sides (4,5).

5

5. A block carton according to one or more of claims 1 through 3, characterized in that the front corner flaps (12) are secured to the front (2).

10

6. A block carton according to one or more of the preceding claims, characterized in that the side portions (4,5) and front (2) of the carton is provided with indicators (15) on the outside for visual inspection, and said indicators (15) becoming visible in case of incorrectly inwardly positioned or lacking cover flaps (8,9,10).

7. A block carton according to one or more of the preceding claims, characterized in that the side portions (4,5), front (2) or back (6) of the block carton (1) is provided with indicators for visual inspection, said indicators becoming visible in case of incorrectly inwardly positioned or lacking corner flaps (12,13).

8. A method of erecting a block carton according to any one of the preceding claims, characterized in that the block carton is arranged on top of a freezing frame intended therefor, whereupon the carton is pressed down into the freezing frame while the corner flaps are folded in such a manner that they abut on the outside of the carton, and subsequently a visual inspection is performed whether the indicators of the rear corner flaps are visible.

9. A method according to claim 8,  
c h a r a c t e r i z e d in that the erection of  
the block carton is carried out by an automaton intended  
therefor, and that the visual inspection is performed by  
5 means of optical sensors.

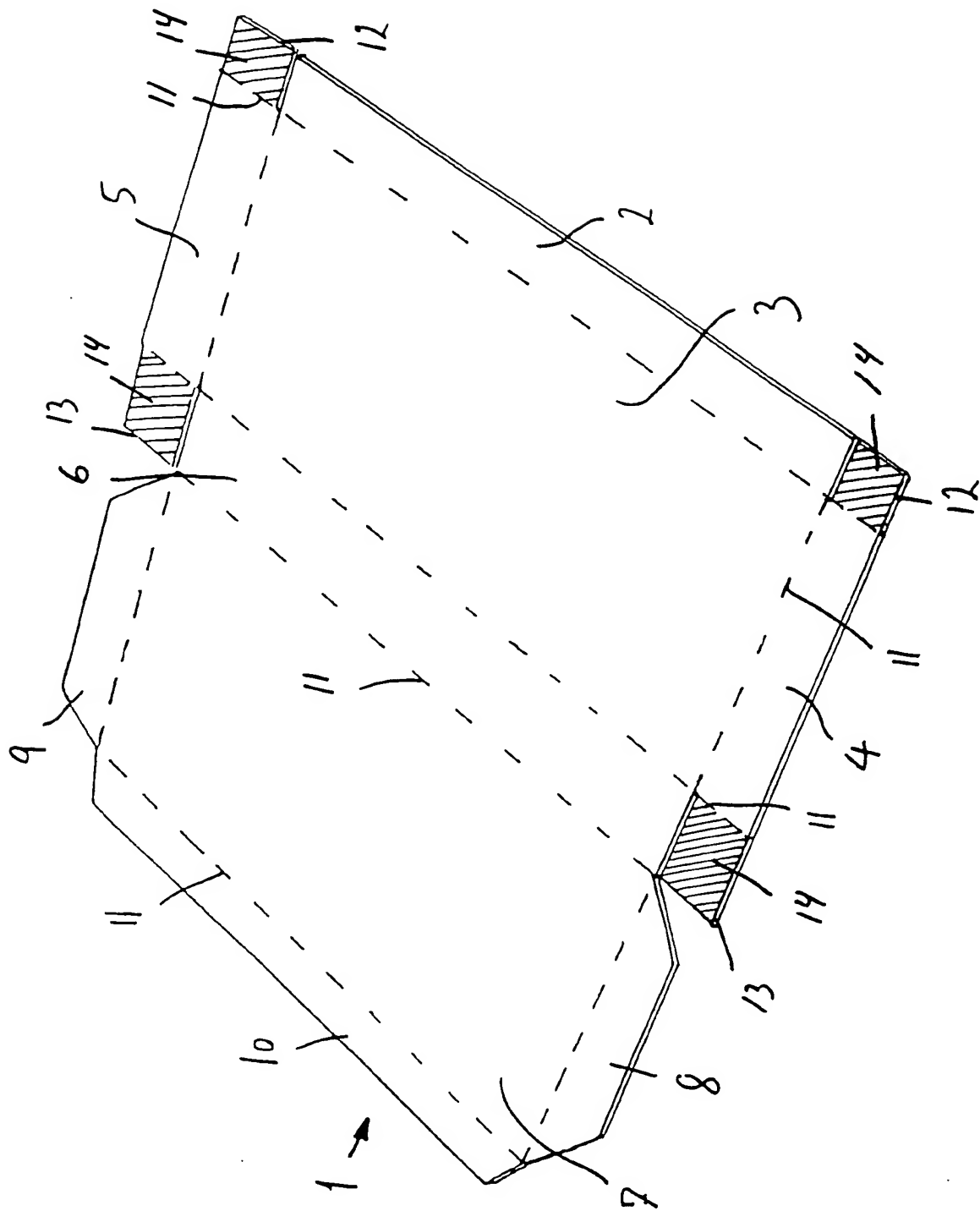


FIG. 1

2/3

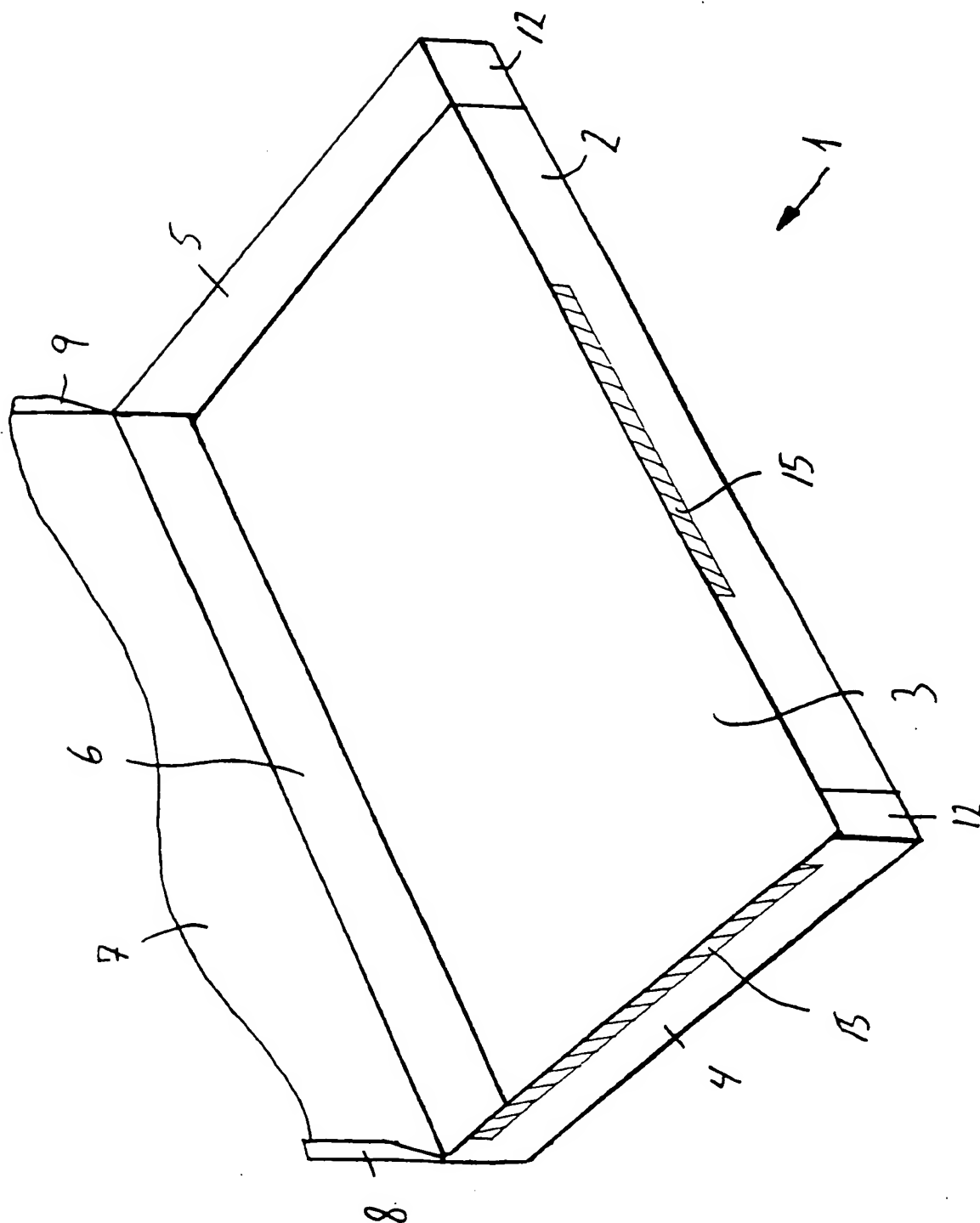


FIG. 2





# INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 96/00354

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: B65D 5/42 // B65B 57/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: B65D, B65B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

QUESTEL: WPIL

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	WO 9602422 A1 (CARTOLIT APS), 1 February 1996 (01.02.96), figure 1, abstract --	1-9
A	US 4684023 A (CORTOPASSI), 4 August 1987 (04.08.87), figure 2, abstract --	1-9
A	US 5103979 A (HUSTAD), 14 April 1992 (14.04.92), abstract -----	1-9

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents:

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A1- 9602422	01/02/96	AU-A- 2977195 DK-A- 85894 ZA-A- 9506021	16/02/96 20/01/96 28/03/96
US-A- 4684023	04/08/87	US-E- RE33979	30/06/92
US-A- 5103979	14/04/92	CA-A- 2025284 EP-A- 0422847 JP-A- 3176366	12/04/91 17/04/91 31/07/91